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ABSTRACT

Designed to present interesting facts about science and to heighten the curiosity of primary age students, this book contains activities about the natural world and numerous black and white illustrations. Activities that focus on the dinosaur are organized into five sections. These include: (1) "Dinosaur Facts/Then and Now" (exploring bird and reptile characteristics); (2) "Dinosaur Eggs/Facts and Fun" (containing experiments, a song, and an art activity); (3) "The Dinosaur Dentist" (examining the two major classes of dinosaurs by their teeth); (4) "Prehistoric Plant Detective" (including activities that help students to discover dinosaur food in the form of plants and trees that exist today); and (5) "Final Features" (providing a pattern and instructions for a dinosaur puppet). The teacher/parent guide section contains directives for assembling a dinosaur egg-puppet carrying case and also identifies sources for additional dinosaur activities. (ML)

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A GOOD APPLE ACTIVITY BOOK FOR PRIMARY GRADES

GOOD APPLE

YOUNG SCIENTISTS EXPLORE

Dinosaurs

BOOK 8 PRIMARY LEVEL

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By Linda Penn Illustrated by Karan Kasper

YOUNG SCIENTISTS EXPLORE

DINOSAURS

BOOK 8—PRIMARY LEVEL

by

LINDA PENN

illustrated by **KARAN KASPER**

cover by **VALERIE LEEDOM** and **TOM SJOERDSMA**

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PREFACE

Fellow Teachers and Parents,

In undertaking to create a children's activity book based on the dinosaur, I ventured into a very popular and intriguing subject area. While researching abundant material, I discovered that scientific opinion on many aspects of the prehistoric lives of dinosaurs varied substantially. To tell today's curious child the story of a dinosaur from its "lumpy" egg-hatching to the gigantic plant-devouring adult, I based my account on the most recent and consistant findings available.

In the first section, we simply look at dinosaurs through their closest living relatives—the familiar birds and reptiles of today. A special classification game, "Two Feet—Four Feet," will encourage the children to identify and act out observable bird/reptile characteristics. Then with simple experiments, children will develop a leathery "turtle egg" and even fossil-like dinosuar eggs, for a Dinosaur Days Science Display. This will be followed by "Dinosaur Dentistry," when they will explore the two major classes of dinosaurs by their teeth and what these dinosaurs liked to eat. As "Prehistoric Plant Detectives," the children will use leaf-prints like fingerprint clues to discover dinosaur food in the form of plants and trees still in existence today.

Last, but not least, armed with an intriguing "Sunprint" photo of a grown-up Paddy Apatosaurus, they will ponder the question, "Could there be a leftover dinosaur living today?"

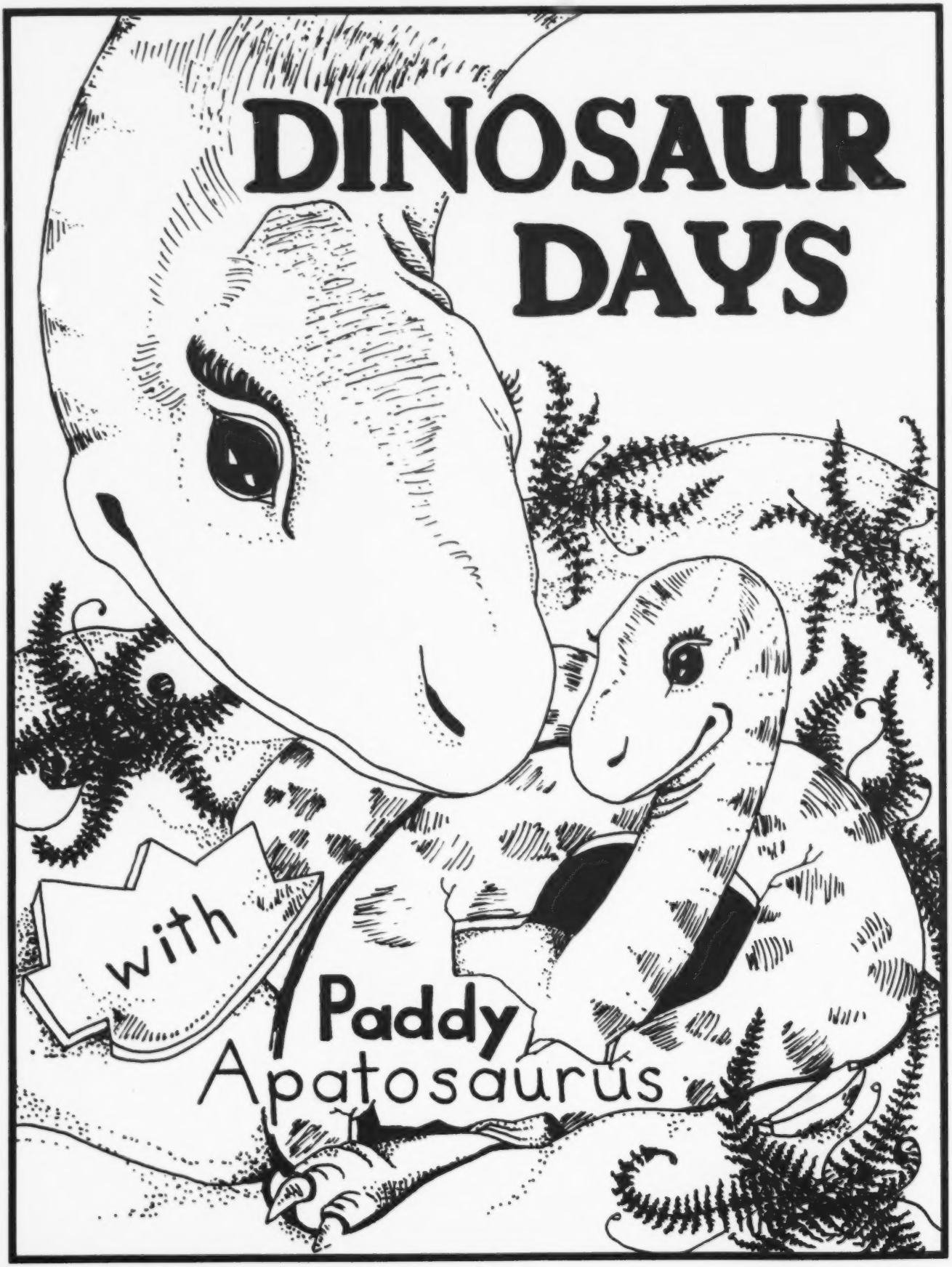
Instructions for a very special Dinosaur "Designer" Puppet, created by Marcia Kaplan expressly for parents and teachers using this book, can be found on the final pages. Please have fun with the dinosaurs, as you continue to . . .

Reach out for the hands
of a curious child.
Share living science,
for it opens young eyes
TO THE WONDER AND BEAUTY OF LIFE.

Your friend in science,

Linda Penn

5


DINOSAUR DAYS
with
Paddy
Apatosaurus

DIGGING UP DINOSAUR FACTS

I am a baby

Next to **MOM**

I looked so small.

But it's been said

my ____ could be

the size of a _____.

egg

soccer ball

dinosaur

DIG ON

When I broke out of my special ____,
A "bunch" of my sisters hatched, too.
The green _____ we spied
could help us hide
and that was the first thing to do.

When we were born it was moist and warm
for the ____ shone
much of the time.
Tasty _____ grew best
near our sandy nest.
Tender _____ were
our favorite kind.

plants

leaves

egg

Time Out for Today

Let's Think About It

Some animals living today hatch from eggs, and these eggs are usually laid in a nest to keep them warm and safe.

Brain Testers

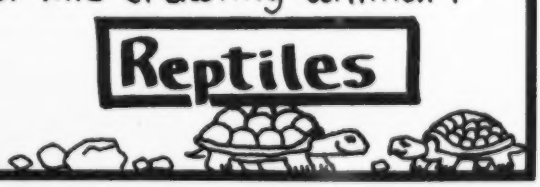
1. Name some animals that make nests and lay eggs.
2. Do these animals have feathers and feet ?
3. What do we call an egg-laying, feathered animal with two feet ?
4. **Birds** can usually move about in two different ways. Can you show a few ways feathered birds might move? Use parts of your body to demonstrate the movement.

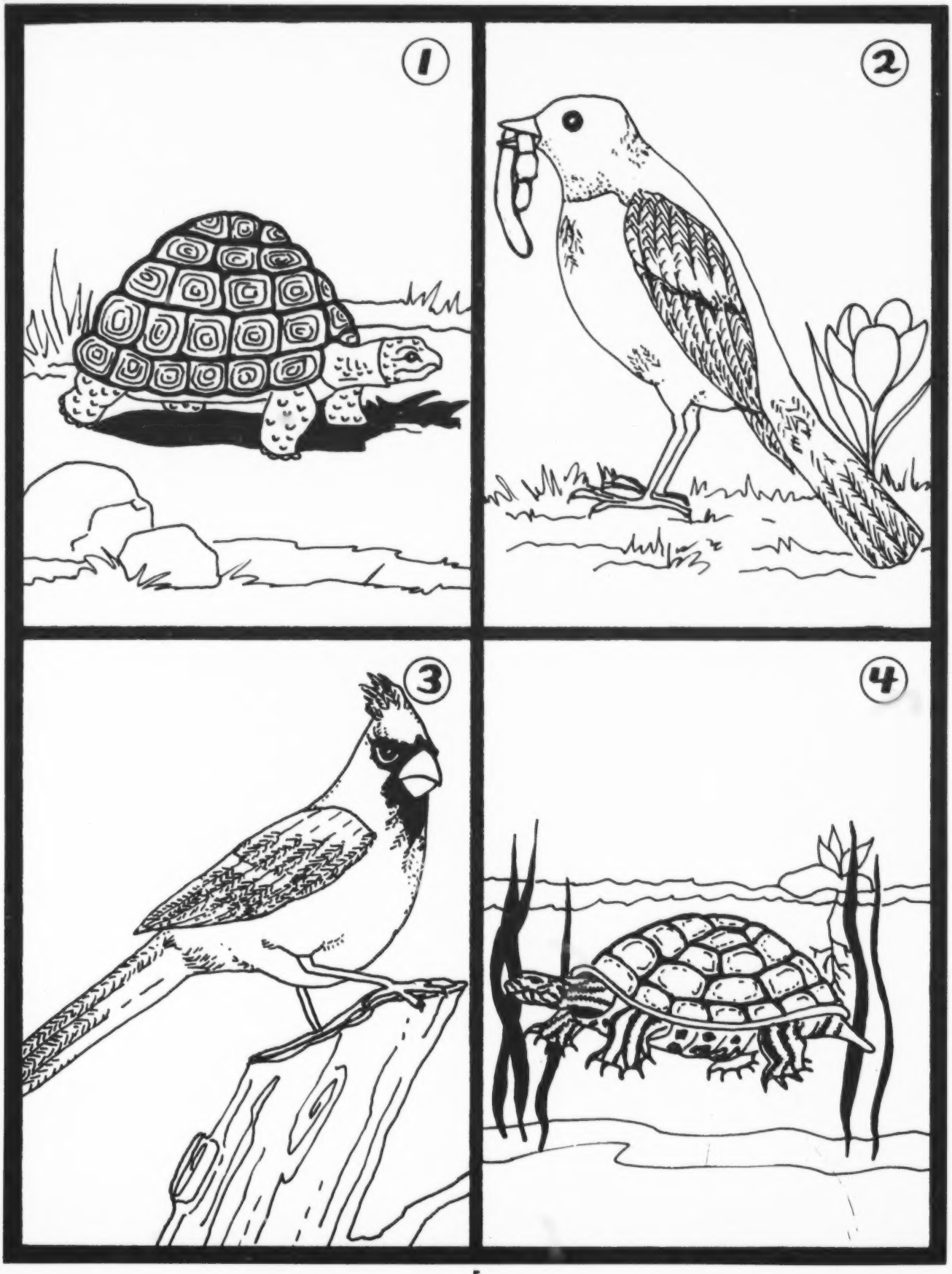
~Brain Break Time~Take a deep breath~

5. Name an animal without feathers that lays its eggs in a nest of sand?

6. Does this animal have more legs than a bird?

7. Can you show how this "featherless" animal moves? Is this movement called "crawling"?
8. Would "**reptile**" be a good name for this crawling animal ?

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The EGGSpress News

Dateline Dinosaurs : Although dinosaurs lived a very long time ago, when it came to "egg-laying" they did a few things like the birds and reptiles of today. We know this because scientists have found buried dinosaur nests.

Paddy, the baby dinosaur pictured on page one, hatched from an ____.

Birds

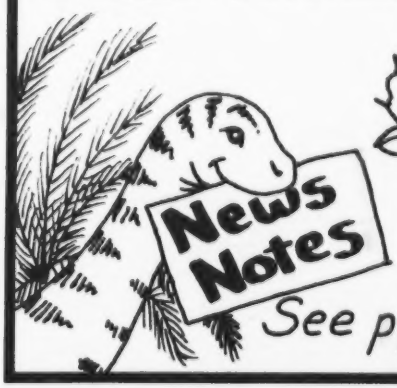
and

reptiles

also

____ from ____.

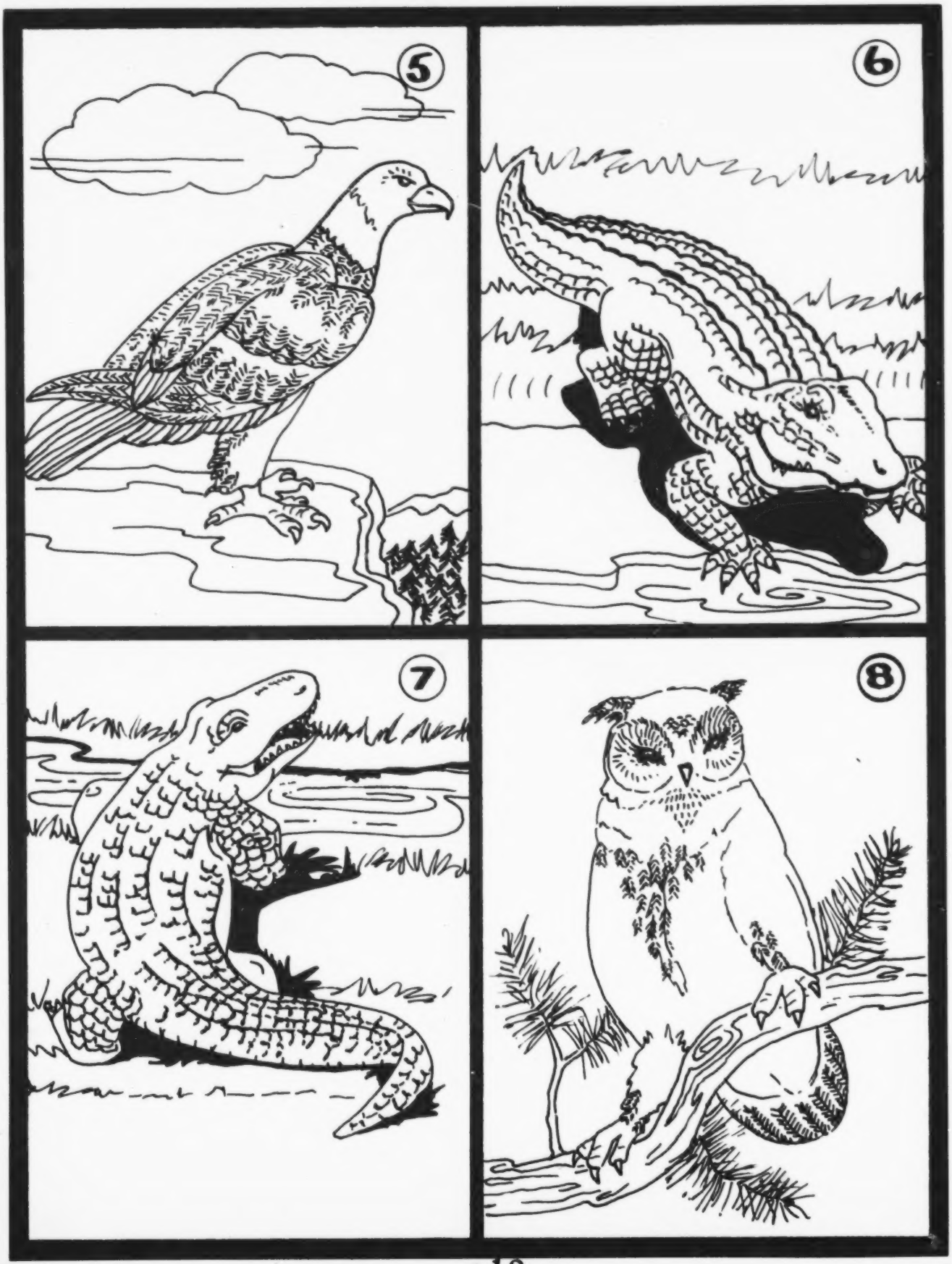
Dinosaur mothers used Sandy nests warmed by the to hatch their eggs, just like some reptile mothers today - the tle, the ard, and, of course, the large, crawling crdile.



Why didn't the dinosaurs make a nest of sticks and sit on their eggs like the birds do today?

Answer: Many dinosaurs were very large and heavy. They were not feathered and warm-blooded like birds.

See pp. 12-13 for "EGG"-citing EGG Experiments!


5
6
7
8

Two Feet ~ Four Feet

Bird / Reptile Classification Game

Preparation of Game Cards Copy pages 5, 7 and 9. Follow "Color Clues" given in Answer Key below. (After coloring, pages may be glued to tagboard and covered with clear Con-Tact paper.) Following the above, cut out game cards.

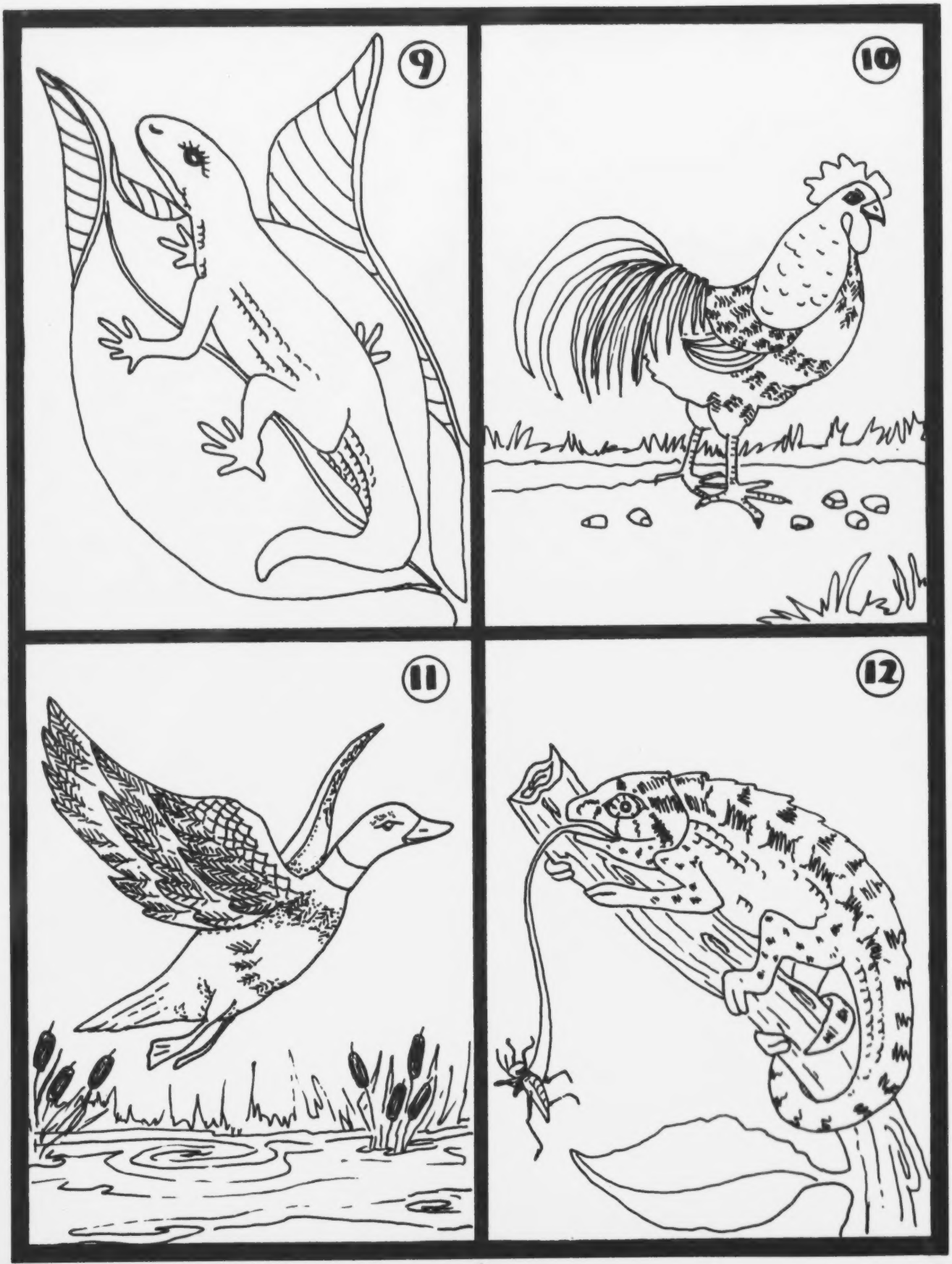
RULES Set up two teams. (Reshuffle cards for more than 12 children.) Each child is shown a single card, then can choose to give just one response or up to four. Each response earns a team point. Maximum points for one turn equals four. Highest team score wins.

Card Responses

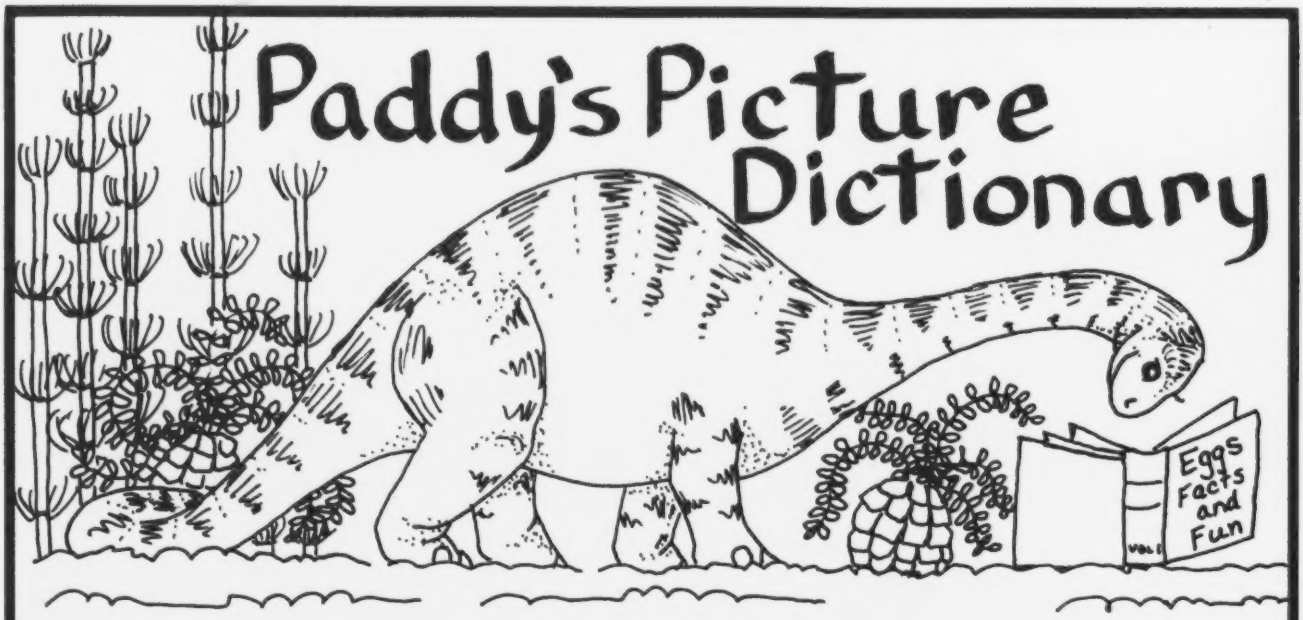
a) Hold up two or four fingers for the number of feet.
b) Classify as bird or reptile.
c) Name the animal.
d) Show how the animal moves.

Answer Key ~ Color Clues

a) four (1) b) reptile c) Tortoise d) crawl shell: Green body: Yellow body: Green	a) two (2) b) bird c) Robin d) hop-fly body: Brown breast: Orange beak: feet: Yellow	a) two (5) b) bird c) Eagle d) fly head: White body: Brown Black beak: feet: Yellow	a) four (6) b) reptile c) Crocodile d) crawl-swim body: Green Brown eye: Yellow	a) four (9) b) reptile c) Lizard d) crawl (Anole) body: Green to match the leaves	a) two (10) b) bird c) Chicken d) walk-fly head: Red body: White beak: feet: Yellow
a) two (3) b) bird c) Cardinal d) hop-fly body: Red beak: Yellow feet: Yellow	a) four (4) b) reptile c) Turtle d) crawl-swim shell: Brown Green head: Green feet: Green	a) four (7) b) reptile c) Alligator d) crawl-swim Green body: Green eye: Yellow	a) two (8) b) bird c) Owl d) fly body: Brown White beak: feet: Yellow	a) two (11) b) bird c) Duck d) fly-swim head: Green wings: Green body: Brown beak-feet: Yellow	a) four (12) b) reptile c) Chameleon d) crawl body: Brown to match tree bark


9
10
11
12

Paddy's Picture Dictionary



Chicken

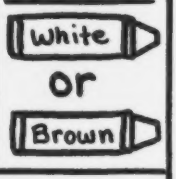
Looks like this...

Egg

Shape

oval

Colors



Nest

Feels like this...

Outer Shell

Hard and brittle. Cracks easily.

Center

From liquid stage to hatching chick.

Outer Nest

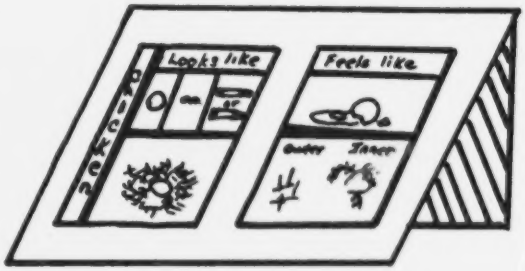
Stiff Straw

Inner Nest

Warm and Fluffy Downy Breast Feathers

Dinosaur Days Display

Mount descriptive cards from Picture Dictionary on tagboard. Use as place cards for sample of eggs and nests.

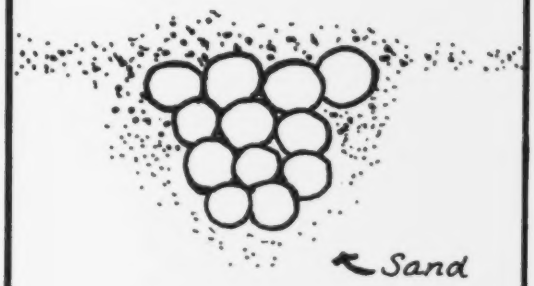


Experimental eggs, pp. 12-13, and nesting materials described here make an effective classroom display.

Turtle

Looks like this...

Egg	shape	colors
	oval to round	White or Brown



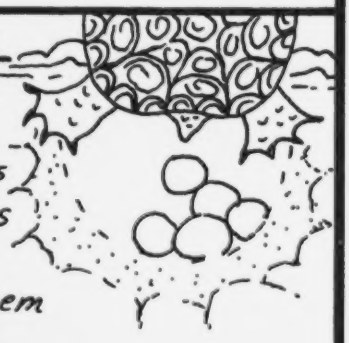
Feels like this...

Outer Shell
Softer, more leather-like than bird or dinosaur eggshell.

Center
Liquid early stage, to hatching baby turtle.

Sandy Nest

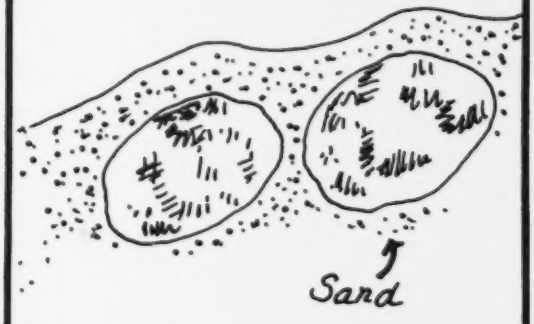
Turtle digs hole and drops leathery eggs into hole, covering them with sand.



Dinosaur

Looks like this...

Egg	shape	colors
	oval to round	white or Brown



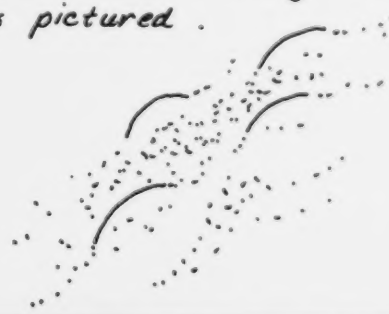
Feels like this...

Outer Shell
Hard and brittle like a chicken egg. Thicker, but bumpy shell, for breathing under sand. "Bumps" provide air spaces in the sand.

Center
From liquid to dinosaur (up to 12" long)

Sandy Nest

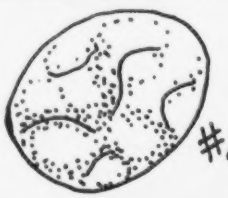
Eggs laid by a large dinosaur were found in a sandy nesting area. Linear arrangement of eggs pictured.



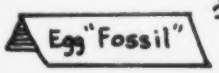
Egg-citing Experiments

Goals

#1 To understand the kind of egg a large dinosaur would have laid millions of years ago and compare it to modern bird and reptile eggs

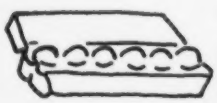


#2 To see what a dinosaur egg "fossil" might look like, if dug up today



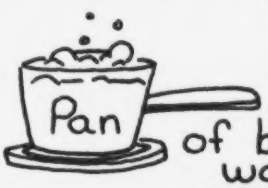
#3 To find out why dinosaur eggs were buried in sand

Materials


½ doz. eggs

lg. tablespoon

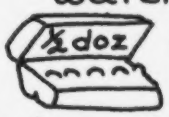
in bowl



of boiling water

container

apple cider vinegar

Hard boil 

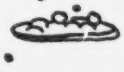
eggs by the following method...

Place eggs in warm water.

Look at the air **bubbles** Eggshells have breathing holes!

Fill a saucepan with water. (to cover eggs by at least an inch)

Bring water to BOIL...



Carefully transfer eggs, using

Tablespoon,

from warm water

to the

boiling water.

Reduce heat to just below simmering and cook eggs 20 minutes.

Immediately place in

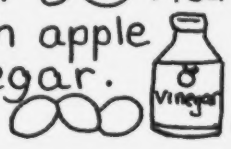
water.

To Achieve Goal #1

Set aside 2 of the hard-boiled eggs.

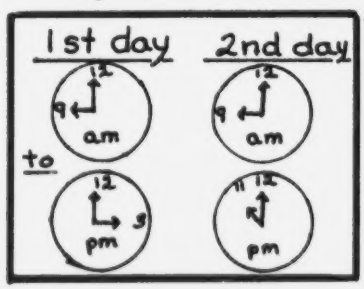
Save as examples of dinosaur eggshell texture. Scientists believe the dinosaur's eggshell had a hard, yet "crackable" surface, like a bird's eggshell

Soak 4 hard-boiled eggs in covered container filled with apple cider vinegar.



Before soaking, tap eggshell lightly so children can "hear" the hard surface!

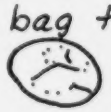
Soak the eggs for about eight hours.
The vinegar will dissolve calcium in the eggshell making it leather-like, soft, and pliable.



Soak on two consecutive days, as per example, so children can be present.

After soaking is completed, remove eggs on spoon and gently rinse with water. Rub eggs carefully to remove powdery calcium residue from surface. ENCOURAGE CHILDREN TO EXAMINE TWO OF THE SOAKED EGGS, PRESSING THE EGGSHELL GENTLY TO FEEL THE TEXTURE OF A REPTILE EGG.

(Place the two examined eggs in a plastic bag to retain softness.)



To Achieve Goal #2

Allow the remaining two (soaked) eggs to dry out, and they will take on the appearance of a dinosaur egg fossil. Use these and other sample eggs in a "Dinosaur Days Display."

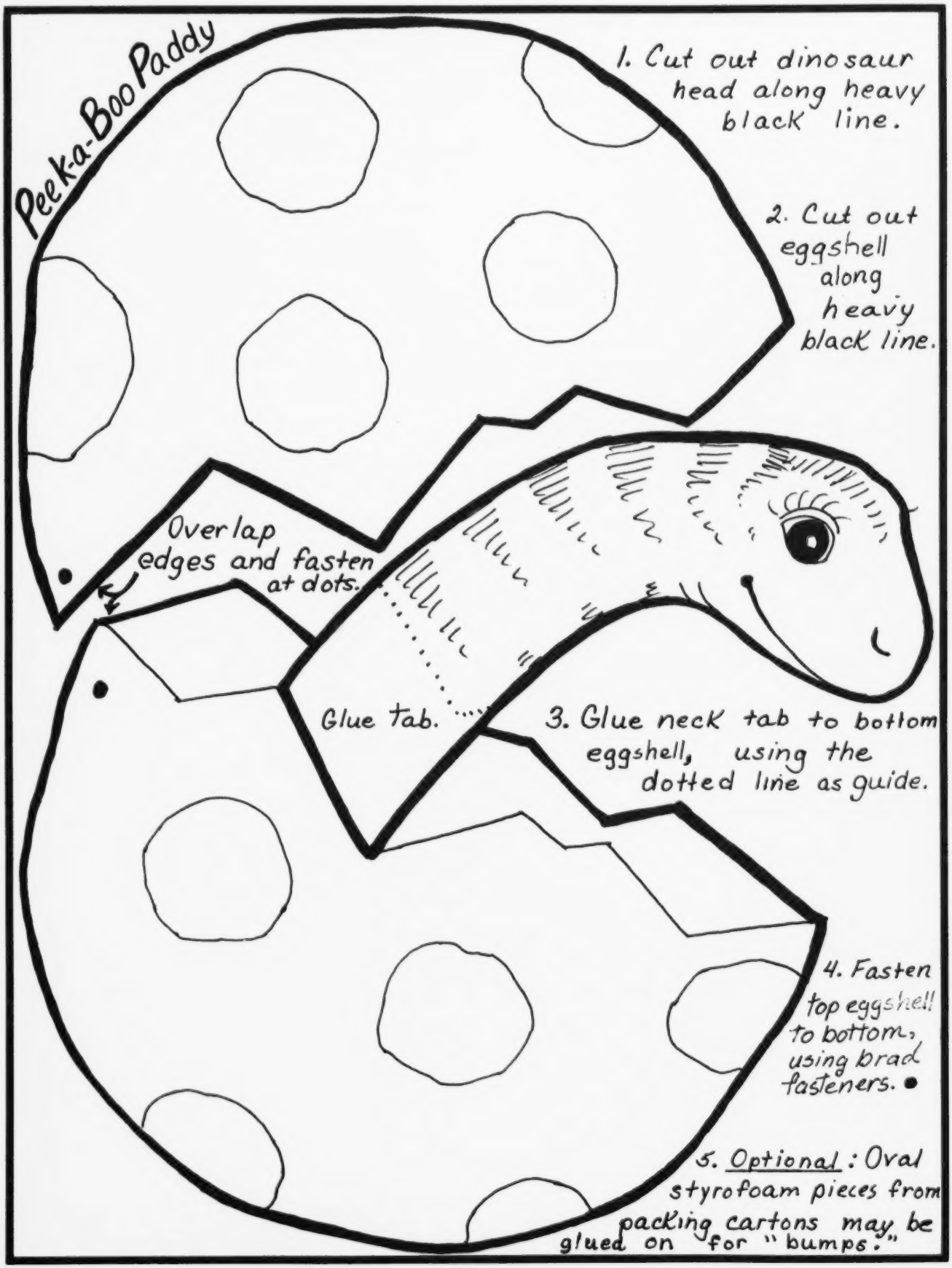
To Achieve Goal #3

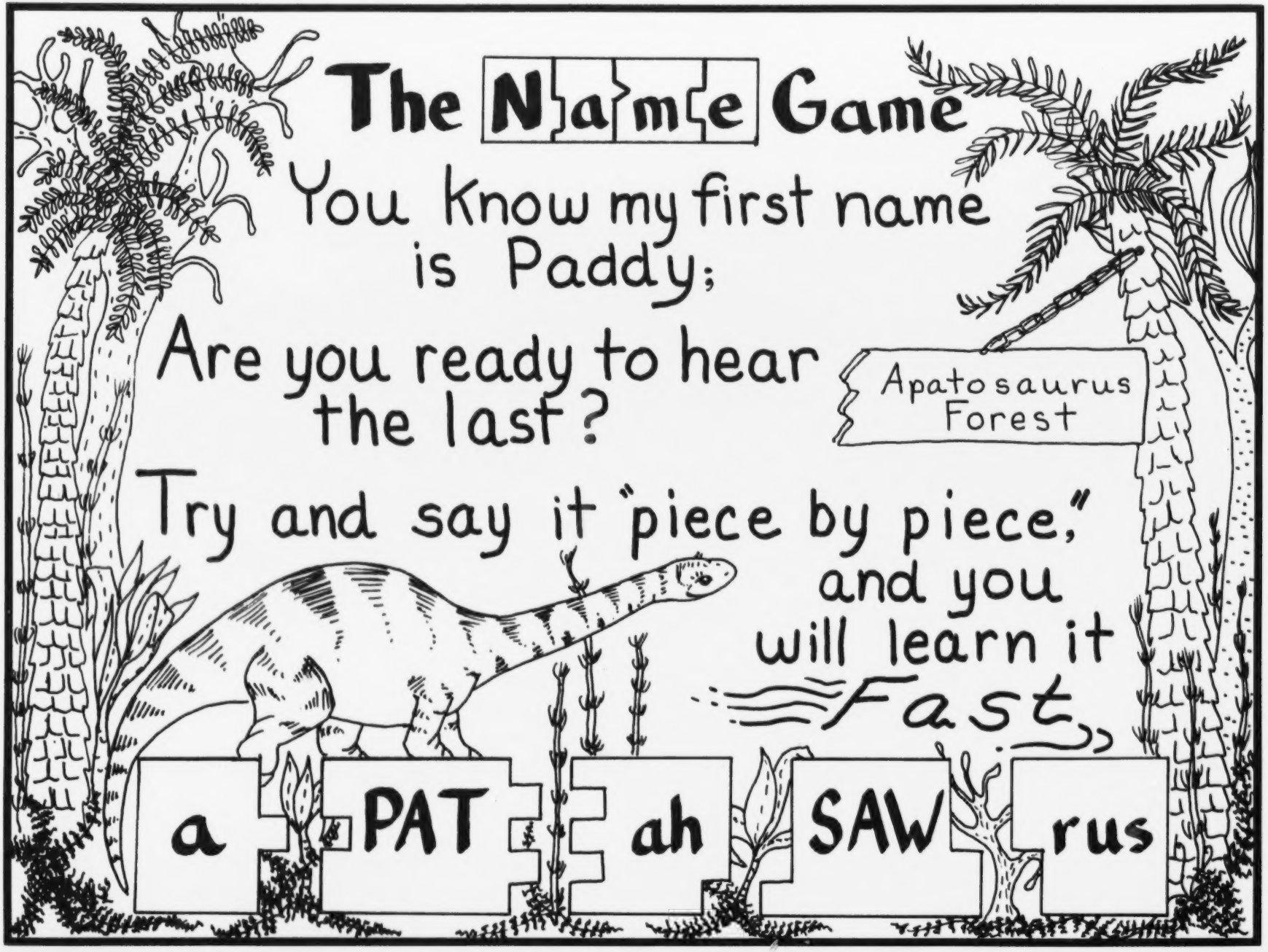
Set a dish of sand in direct sunlight. Encourage children to feel warmth from the sun "held" in the sand ~ a perfect nest for the egg of a large, cold-blooded dinosaur!

Dinosaur Days

verse I I'm a ba- by di- no- saur, even though you won't find me an- y- more. I lived so long a- go, that's im- por- tant you see in help- ing man to un- der- stand how all life came to be.

verse II I hatched from a lum- py egg. A ra- ther large and bum- py egg. My mo- ther laid me down in the sand, out of sight. Those egg - shell lumps, my breathing bumps would help me be al- right. I'm a ba- by di- no- saur.


Peek-a-Boo Paddy
1. Cut out dinosaur head along heavy black line.
2. Cut out eggshell along heavy black line.
Overlap edges and fasten at dots.
Glue tab.
3. Glue neck tab to bottom eggshell, using the dotted line as guide.
4. Fasten top eggshell to bottom, using brad fasteners.
5. Optional: Oval styrofoam pieces from packing cartons may be glued on for "bumps."


The Name Game
You know my first name is Paddy;
Are you ready to hear the last?
Apatosaurus Forest
Try and say it "piece by piece," and you will learn it Fast,
a
PAT
ah
SAW
rus

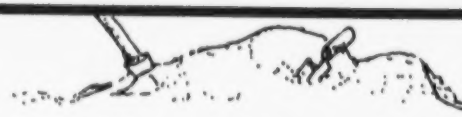
There's one more name
you'll need to know;
It belongs to our enemy.
Although we like
to eat green leaves,
Big bad "AL" eats only meat.

The teeth of the Apatosaurus were flat on the bottom for eating soft plants'leaves, while Allosaurus, the meat eater, had sharp, pointed teeth. Their respective puzzle pieces reflect the difference. **Welcome to the world of Dinosaur Dentistry!**

Before cutting out puzzle parts, glue to lightweight cardboard for easy assembly.

AL | oh | SAW | rus

More: Dinosaur Days

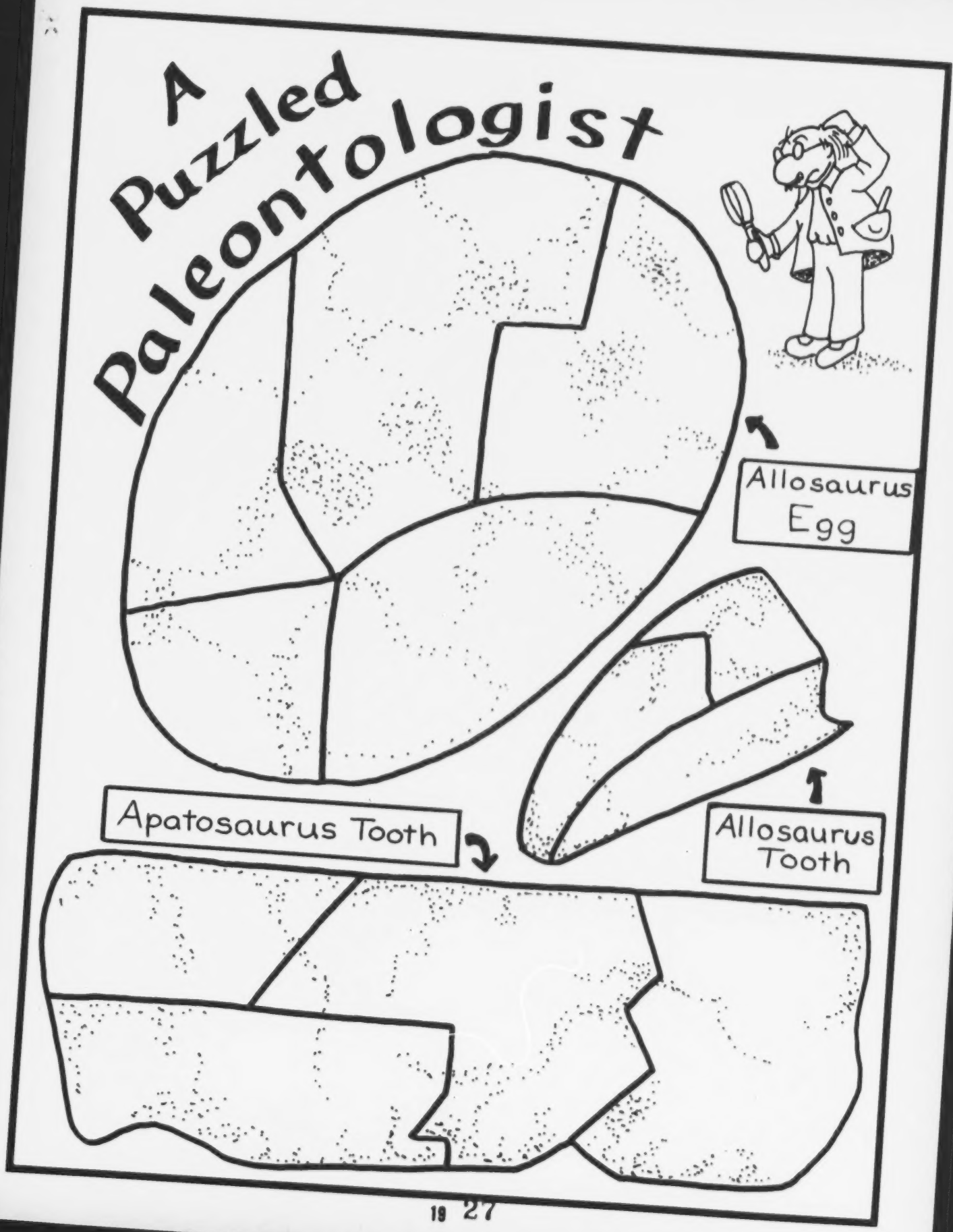


verse III

Mu- seums have pa- le- on - tol- o- gists, special puz- zle solv- ing sci - en- tists. With fossils from the earth like gi- ant bones and eggs, they help de- fine that long ago time when dinosaurs did ex- ist. Fos- sils tell of long a- go.

Put-together Puzzle Word

pay	lee	an	TOL	le	gist

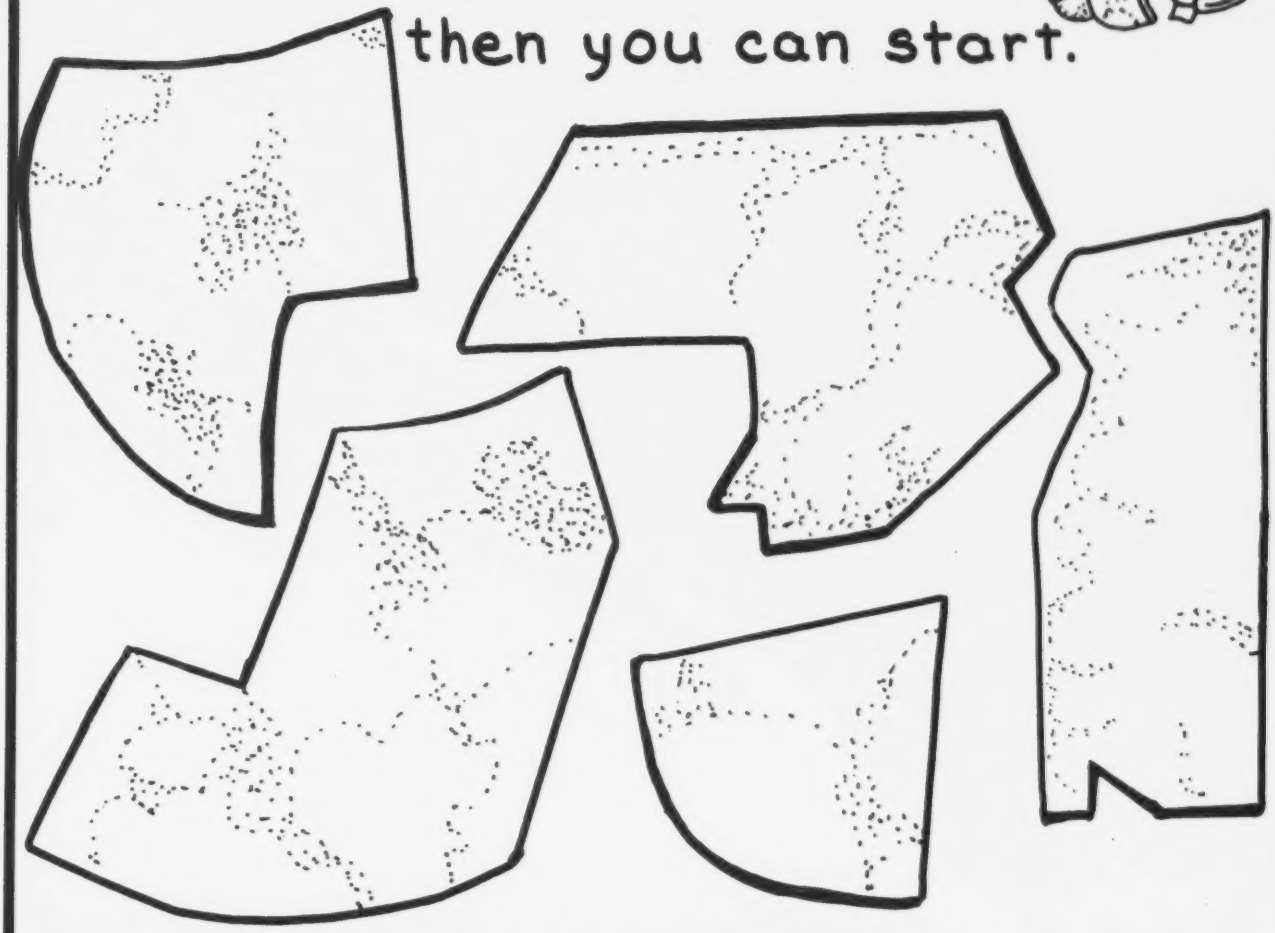

A Puzzled Paleontologist
Allosaurus Egg
Apatosaurus Tooth
Allosaurus Tooth

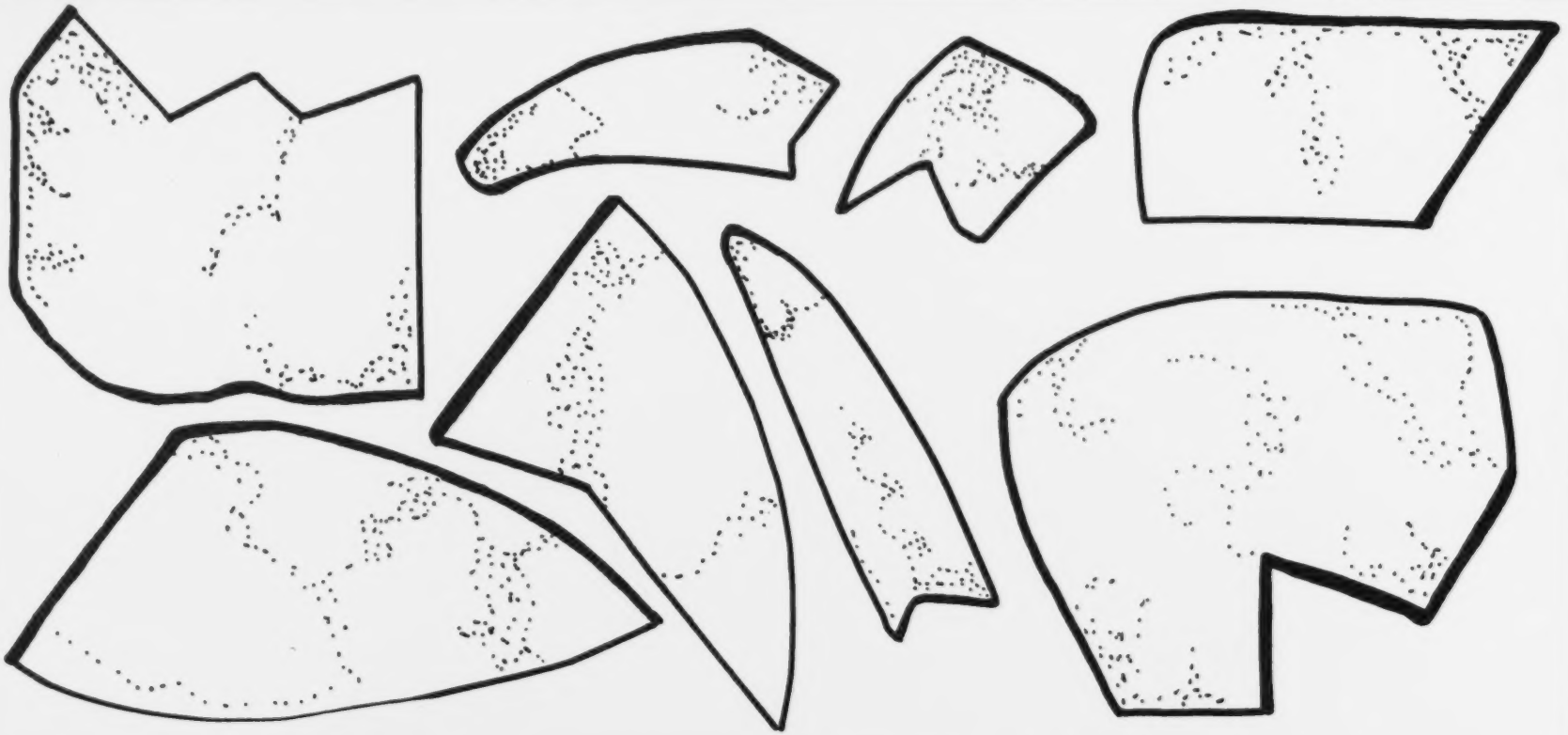
Assist a Scientist

We know buried fossils
of bones and eggs
are hard-as-rock clues
to Dinosaur Days.

Solve these fossil PUZZLES.

One has too many parts.
So study them carefully;
then you can start.

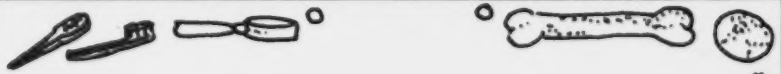




21

Copy pp. 19-21 ~ Glue all puzzle parts to light-weight cardboard before cutting out. For younger children use p.19 as puzzle frame.

Official Name Tag and Lab Sign



Dr. _____

(Assistant Scientist)

QUIET

Paleontology Lab

- Scientist at Work -

HIDE and SEEK SCIENCE

Our dinosaur days
were warmed by the sun

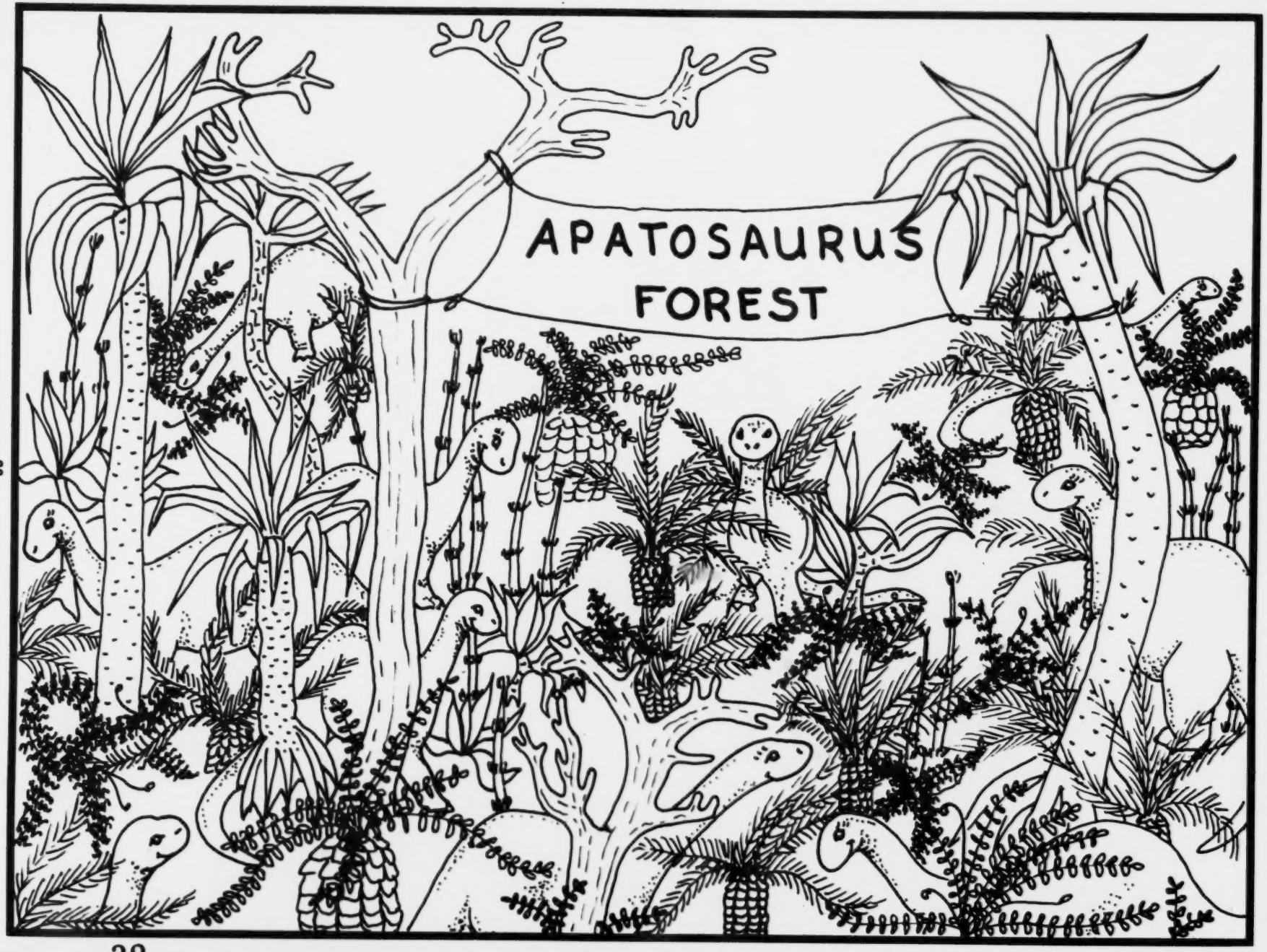
Many plants grew
in forests of green

There was plenty to eat
and places to hide

Can you find us
in this forest scene?

When you find us,
please **Stripe**
us **Green.**

The stripes will be our
camouflage (KAM-o-flagh).
We don't want to be
seen by **BIG AL!**


APATOSAURUS
FOREST

Ferns, Spores and Dinosaurs

Soft fern leaves
were really important to me,
and in "Dinosaur Days" they grew easily.

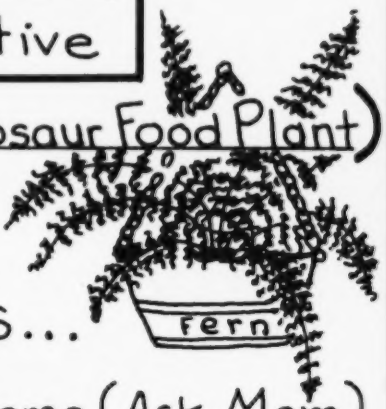
In fact, many ferns still grow well today.

, rain, and seed spores,
have kept them that way.

(Name) _____

Dinosaur Days Detective

Duty: Find a Fern (The Dinosaur Food Plant)



Today's fern can look
like this...

Where-to-check list...

- ☐ at home (Ask Mom.)
- ☐ at school (Ask Teacher.)
- ☐ at Grandma's (Ask by telephone.)

After locating a fern ... **Ask** the plant's owner to check under plant leaves for seed spores (tiny dots arranged in a row).

☐ I found fern seed SPORES and they looked something *like this.*

More Ferns, Spores and Dinosaurs

☐ **I asked the fern plant owner what would be best for keeping the fern plant alive and growing.**

- ☐ direct sunlight
- ☐ indirect sunlight

- ☐ watering
- ☐ spray misting

- ☐ plant food

- ☐ ALL OF THE ABOVE

Following questioning, please ask for a small sample of the fern plant. Press small sample between pages of book. Return sample to Dinosaur Days Headquarters. You can use it for making a "Sunprint" photo for your Dinosaur Record Book.

Congratulations Detective _____
on a job well-done!

Parents ~ Teachers: It is now possible to make "Sunprint" photos using only sunlight and water. Everything needed comes in an easy-to-use and inexpensive kit. Discovery Corner address and details inside the back cover.

More: Dinosaur Days

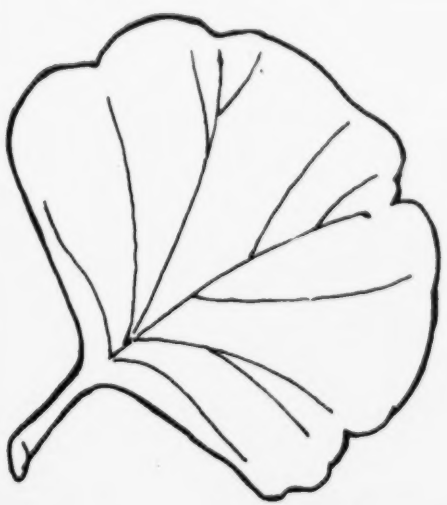
verse IV
I like eat-ing ten- der leaves. I'll
get so big, I'll eat tall trees. And
when I walk a- round there'll be thun-der on the ground. When you
sing my song, please stomp a-long and thun - der just like me.
Be a gi - ant di - no- saur.

It's a Fact That...

Ginkgo trees were growing then (in the days of dinosaurs)
and they're still growing now!

If you'd like to prove that fact,
the Ginkgo Guide will show you how.

① Cut out leaf and trace on lightweight cardboard.



② Using the original, make an impression of leaf lines into the cardboard with a sharp pencil. Cut out cardboard "leaf."

③ Have children make a Ginkgo Tree (also Maidenhair) "rubbing" of the cardboard leaf by placing it under a lightweight sheet of typing paper and rubbing, back and forth, with side of crayon.

OPTIONAL: Use original leaf for Sunprint photo.

④ Children become Ginkgo Tree Detectives, using the rubbings as "fingerprint" clues to discover a live Ginkgo - the Dinosaur Tree.

Beware the flower with it's funny "smell"...
Find a male tree and you'll get along well.

Could there be...

A "Leftover" Dinosaur?

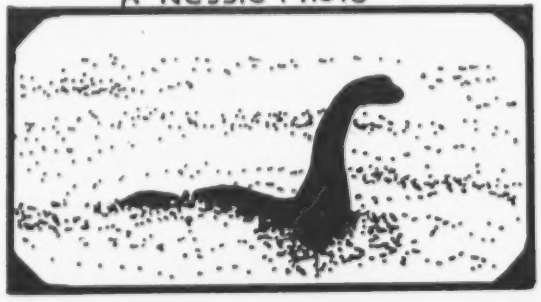
Today, some say, one may exist
in the waters of Scotland, known as Loch Ness.

This creature's called Nessie
and it's only been seen

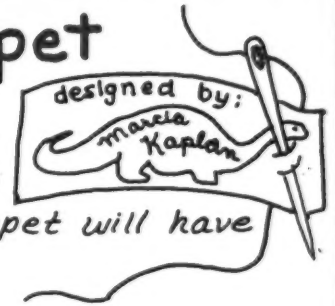
Take Paddy's Picture

Using sunlight, water, and the Super Sunprint Kit, make a Sunprint photo of Paddy (*see inside back cover for details for Sunprint*). Simply cut out dinosaur and outline of water along solid black line. Encourage children to compare Paddy and Nessie's photos. What do they think???

"A Nessie Photo"



Dinosaur "Designer" Puppet



Make a delightful classroom mascot for your "Dinosaur Days" teaching unit. This easily constructed puppet will have its own "lumpy" egg carrying case.

Materials needed

- 1 yd. green velour, fleece, or any soft, non-wrinkling material
- ⅓ yd. sandy brown material, velour best
- ⅓ yd. lining in any color. Cotton is fine.
- Plastic Lash Strip for eyelashes or substitute black felt, hand-cut lashes
- 1 pr. 24mm eyes, brown or white background. Prefer "Animal Eyes" with insertable posts.
- Stuffing (small amount)
- Styrofoam Cones (purchase four 2½" cones)
- Black Felt (small piece for nostrils)
- Velcro Dots (three, sandy colored)
- Tacky Glue, Thread (to match)

PUPPET MOUTH

(cut to size from posterboard)

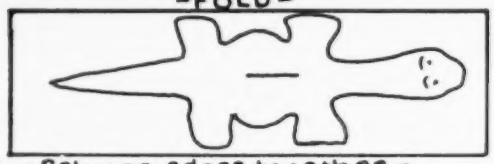
Make transparency of p. 30.

Using Overhead Projector enlarge dinosaur pattern piece to 36 inches in length.

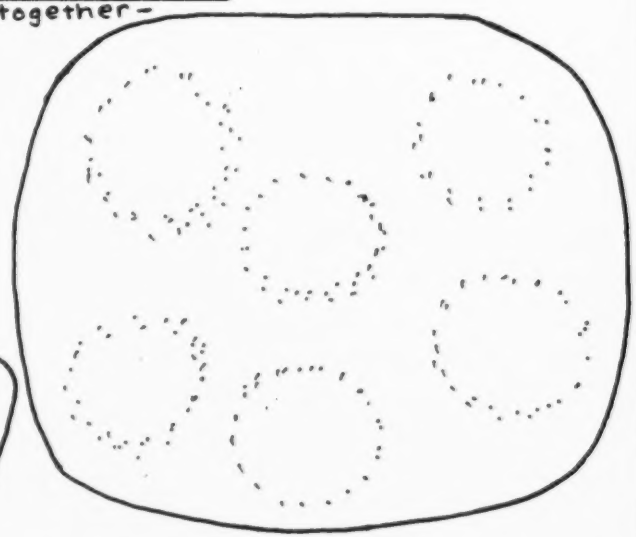
Transfer pattern onto large sheet of paper. The egg pattern will enlarge proportionately at same time.

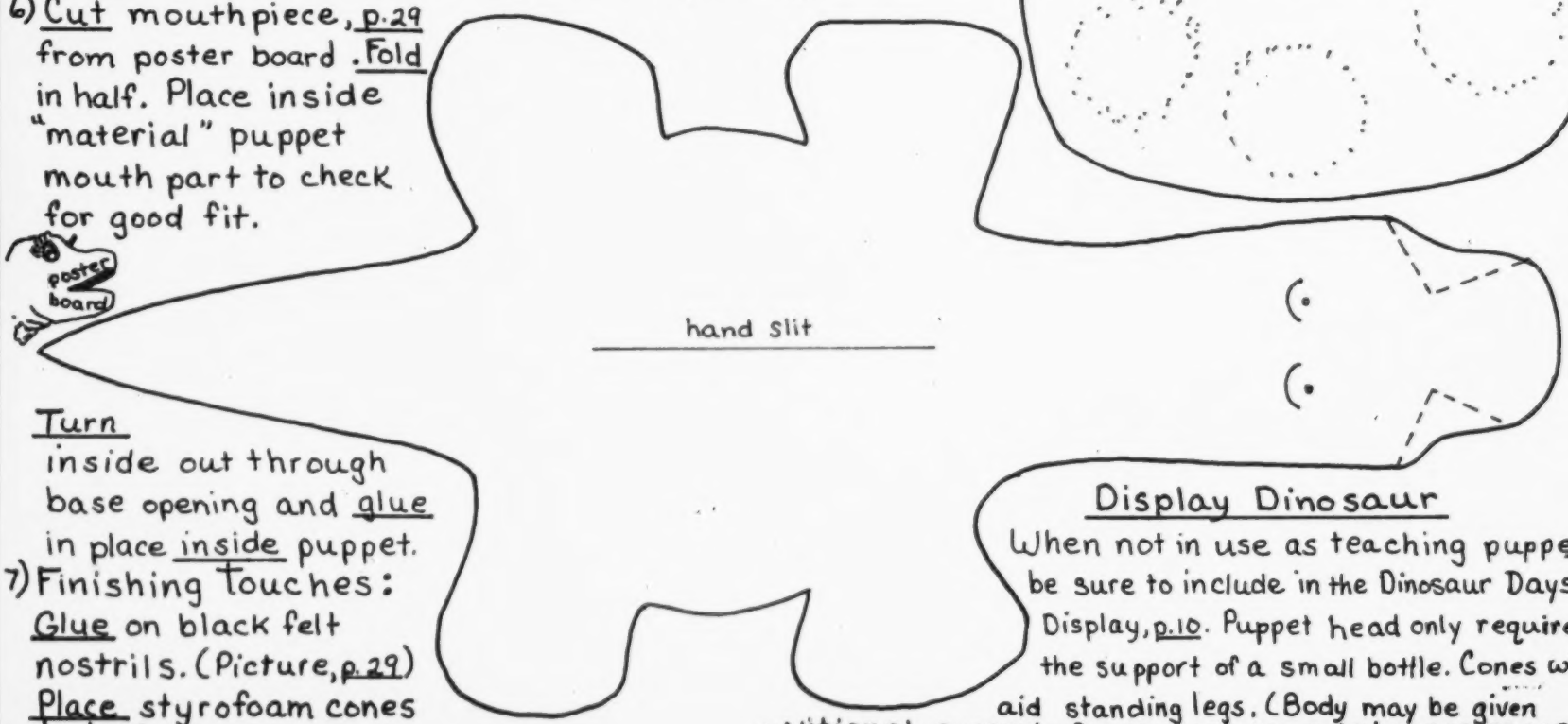
Cut out enlarged patterns.

Designer Dinosaur ASSEMBLY



1) Place dinosaur pattern on doubled green fabric. Pin in place and cut out. Hand slit should be cut on bottom side of piece. If fabric frays, slit may be overcast or zigzagged to finish opening.
2) Mark darts on top and bottom pieces. Sew all four darts.
3) Secure eyes in place. Sew on lashes.
4) With right sides together, pin fabric. Sew, allowing ¼ inch seams.
5) Turn right side out through base opening.
6) Cut mouthpiece, p.29 from poster board. Fold in half. Place inside "material" puppet mouth part to check for good fit.





Turn inside out through base opening and glue in place inside puppet.
7) Finishing Touches: Glue on black felt nostrils. (Picture, p.29) Place styrofoam cones in legs.

Display Dinosaur

When not in use as teaching puppet, be sure to include in the Dinosaur Days Display, p.10. Puppet head only requires the support of a small bottle. Cones will aid standing legs. (Body may be given additional support, for a more rounded appearance.)

TEACHER/PARENT GUIDE

"Lumpy" Dinosaur Egg—Puppet Carrying Case

ASSEMBLY:

(1) The egg case pattern will measure approximately 11 x 13 inches. Pin to top of doubled brown velour material and cut out.
(2) Do the same with cotton fabric.
(3) Pin cotton fabric to wrong side of velour. Sew all around, allowing ¼ inch for seam. Do this to both pieces.
(4) Sew circular shapes on top of both velour pieces. (These will become the egg "lumps.") Circular shapes can vary in number and should be arranged randomly, as suggested by the pattern piece.
(5) On cotton side, make a slit in the cotton in the middle of each circular shape. Push a bit of stuffing into slit. Then sew up slit opening by hand. Presto! You have an egg bump. Repeat for each circular shape sewn.
(6) With right sides together, sew 5/8 inch seam around three sides of the egg case. Turn right side out.
(7) At case opening, turn edge into inside and hand stitch down on both sides of opening.
(8) Place Velcro dots on inside of hand-stitched edge (above) and again hand stitch each dot in place. PUPPET MAY "HATCH FROM" OR BE CARRIED IN YOUR "LUMPY BUMPY" EGG CASE!

Additional Resources and Dinosaur Activities

The Children's Picture Prehistory—Dinosaurs, Anne McCord, © 1979, Hayes/Usborne
Water for Dinosaurs and You, Roma Gans, © 1972, Crowell Read and Find Out Science
Ranger Rick's Nature Scope, "Digging into Dinosaurs," © 1984, National Wildlife Federation
The Dinosaur Encyclopedia, Dr. Michael Benton, © 1984, Simon and Schuster, Inc.
Dinosaurs, An Illustrated History, Edwin H. Colbert, © 1983, Hammond, Inc.

"SUNPRINTS" An Exciting Science Extra

A quick (5 minutes to develop) and easy-to-use Sunprint Photo Kit is available from:

Discovery Corner, Dept. A
Lawrence Hall of Science
University of California
Berkeley, California 94720

Write for free catalog or call 415-642-1016 to order kits by phone.
Regular Sunprint Kit makes 30 (4" x 4") prints @ $5.00
Super Sunprint makes 24 (8" x 12") super prints @ 7.50
Super Sunprint Refill with additional 24 sheets @ 3.95

In this book MAKE SUNPRINTS OF

p.17-Big Al Allosaurus (Super Kit Size)
p.19-Egg and Teeth Fossils (Super Kit Size)
p.25-Fern Plant, Paddy's favorite food (Reg. Kit)
p.27-Ginkgo, The Dinosaur Tree (Reg. Kit)
p.28-Paddy Apatosaurus (Super Kit)

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